

**WHAT IS CLAIMED IS:**

1. An electrical test probe for a connector assembly comprising:  
an elongated contact having an intermediate collar; and  
an elongated helical coil spring disposed about said contact, with one end of the spring bearing against one side of said intermediate collar such that the plane of the spring is at an acute angle to said one side of the collar, and wherein the opposite end of the spring includes contiguous spring coils, whereby, in operation, when the electrical probe is compressed between a printed circuit board and an integrated circuit, the longitudinal axis of the contact is skewed to establish a direct electrical path between the contact and the contiguous spring coils of the spring.

2. An electrical test probe as in claim 1 wherein the elongated contact has at one end thereof a crown configuration for engaging the solder ball of a BGA integrated circuit, while the opposite end of said elongated contact is disposed within said contiguous spring coils of the helical coil spring.

3. An electrical test probe for a connector assembly as in claim 1 wherein said one end of the spring includes contiguous spring coils.

4. An electrical test probe for a connector assembly as in claim 1 wherein the intermediate portion of the elongated helical coil spring is of constant pitch.

5. An electrical test probe for a connector assembly as in claim 1 wherein the diameter of the contiguous spring coils at said opposite end of the helical coil is of smaller diameter than the diameter of the coils at said one end of the spring.

6. An electrical test probe for a connector assembly as in claim 1 wherein the helical coil spring is made of beryllium copper.

7. An electrical test probe for a connector assembly as in claim 1 wherein the connector assembly includes a non-conductive substrate having opposed top and bottom surfaces and a plurality of annular through holes extending between said top and bottom surfaces, each said through hole having an enlarged diameter portion intermediate said top and bottom surfaces, and wherein a plurality of electrical test probes corresponds to said plurality of through holes, with each test probe being disposed within a through hole.

8. A connector assembly for forming a plurality of electrical connections between an integrated circuit package and a printed circuit board, said connector assembly comprising:

a non-conductive substrate having opposed top and bottom surfaces and a plurality of annular through holes extending between said top and bottom surfaces, each said through hole having an enlarged diameter portion intermediate said top and bottom surfaces; and

a plurality of resilient electrical probes corresponding to said plurality of through holes, each said electrical probe being formed from an elongated contact and a helical spring,

said elongated contact having an intermediate enlarged diameter collar portion disposed within said enlarged diameter portion of said through hole, with a first end of said elongated contact extending beyond the top surface of said substrate, while the second end of said elongated contact is disposed within said through hole and is of smaller diameter than said collar portion thereof,

said elongated helical spring being disposed about said elongated contact and having an upper portion, an intermediate portion, and a lower portion, said upper spring portion bearing against one side of said enlarged diameter collar and being tightly wound such that the coils thereof are contiguous, said intermediate spring portion being wholly disposed within said through hole and being of a diameter greater than the diameter of said second end of the elongated contact, and said lower spring portion being also tightly wound such that the coils are contiguous, said lower spring portion being of a diameter smaller than the through hole at the bottom surface of the substrate so as to extend beyond said bottom surface for connection to a printed circuit board whereby, in the operative position of the electrical probe, the collar of said elongated contact bears against the upper portion of said spring resulting in tilting of said elongated contact such that the second end thereof makes electrical contact with said lower spring portion.

9. A connector assembly for forming a plurality of electrical connections between an integrated circuit package and a printed circuit board as in claim 8, wherein said helical spring is made of beryllium copper.

10. A connector assembly for forming a plurality of electrical connections between an integrated circuit package and a printed circuit board as in claim 8, wherein said first end of the elongated contact is formed with a crown configuration for engagement with a solder ball of a BGA integrated circuit package.